Industeel

ArcelorMittal

W 1.2316 S

W 1.2316 S: A resulfurized and corrosion resistant prehardened mold steel

W1.2316 S is a 16%Cr 1% Mo mold steel with improved corrosion resistance properties, thanks to the chromium and molybdenum additions. Furthermore, specific sulfur additions are considered to increase its machinability properties. In quenched and tempered conditions, the grade has a fully bainite martensite microstructure and can be delivered in the prehardened conditions (300 HB).
The grade is not designed for highly finish polished surfaces or etched surfaces. This grade is commonly used for mold steel applications including cores, inserts, molds... subjected to wet processing and/or storage conditions. The grade is also used for the manufacturing of corrosive materials like PVC.

PROPERTIES

ACCORDING TO STANDARD

> DIN EN 4957	X38 CrMo16 (S)
> WERKSTOFF	1.2316 with S addition (≈ 1.2085)
> AFNOR	Z40 CD16S

CHEMICAL ANALYSIS

Typical values (weight%)

C	S max	P max	Si	Mn	Cr	Mo
.4	.070	.030	.350	.80	16	0.9

MECHANICAL PROPERTIES

1.2316 S is delivered **quenched and tempered to 280 - 325 HB (29 - 33 HRC).**

Hardness	Rp 0.2 Yield Strength		Rm Tensile strength		Elongation	Reduction of area	Elastic modulus	
HB	MPa	ksi	MPa	ksi	%	Z%	GPa	ksi
300	860	125	1045	152	10	21	207	30023

Typical values
Higher hardness (340HB) available on demand.

PHYSICAL PROPERTIES

Thermal conductivity W.m-1.K-1	Thermal expansion Coefficient (10-6.K-1)				
20°C	20-100°C	20-200°C	20-300°C	20-400°C	Specificheat J/kg.°C
24.3	11	11.1	11.4	11.7	460

Typical values

METALLURGICAL PROPERTIES

Metallurgical transformation points

AC_1	AC_3	M_S	B_S
817°C 1503°F	903°C 1657°F	235°C 455°F	235/400°C 455/752°F

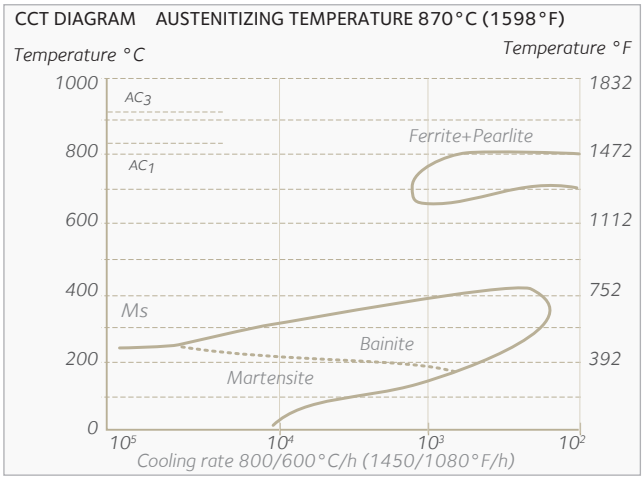


PLATE PROCESSING

HEAT TREATMENT

W1.2316S is generally delivered in hardened and tempered conditions (quenched + tempered). Subsequent heat treatment is therefore not necessary.

Hardening

For applications requiring higher mechanical characteristics than those usually required, hardening can be performed in the following way:

> heating between 985 and 1020°C (1805 - 1868°F) with sufficient soaking time (≈ 1 hour per inch)

> oil or air cooling depending on wall thickness (refer to CCT diagram)

Tempering

Tempering temperature is depends on the required mechanical properties. In a general way, the following instructions should be taken into account:

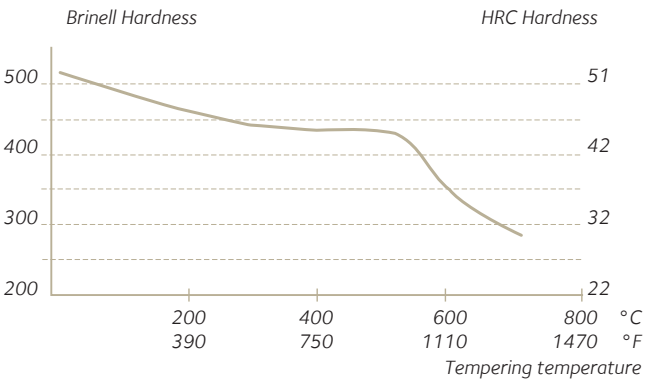
> uniform heating to the selected temperature

> soaking for one hour per inch of total thickness

> double tempering with cooling to room temperature

Note - complicated parts require accurate control of steel temperatures and holding time.

Tempering curve



APPLICATIONS

> Holders and support plates

> For any corrosion application

DELIVERY CONDITIONS

DIMENSIONAL PROGRAM

Thickness	Width
20 - 120 mm (. 79" - 4.7")	1500 - 2500 mm (59 - 98.4")
120 - 300 mm (4.7" - 12")	1500 - 1700 mm (49" - 67")

Length: up to 6000 mm (19.6 ft). For specific dimensions, please contact our sales department.

YOUR CONTACTS

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